



# CPM-2 Interactive Dashboards as a Tool for Participatory Analytics

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Peter Yang, Zhilin Wang

Mentor: David Torres-Mendoza

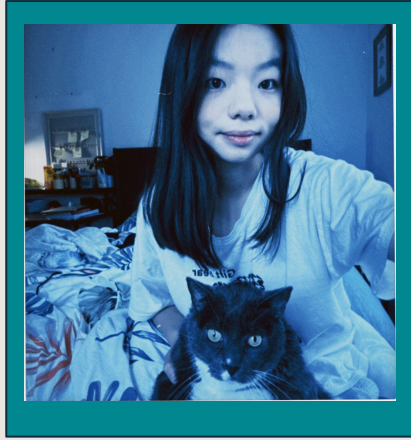


# ABOUT US



Nidhi Bhogi

Rising senior from Fremont, CA attending Irvington High School



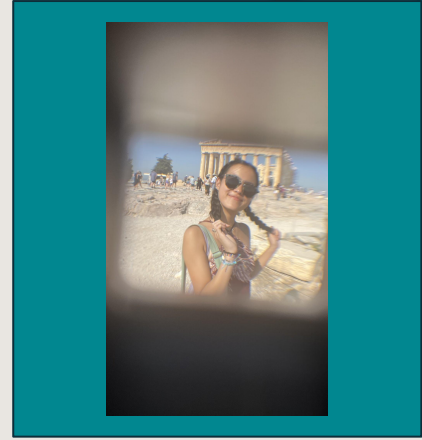
Bonnie Wang

Rising senior at Kirby high school in Santa Cruz, from Hangzhou, China.



Peter Yang

Rising junior from Maryland attending Gilman School



Zhilin Wang

Rising senior from Santa Cruz attending Aptos High School.

# Motivation Behind Project

- Students unmotivated, give less thoughtful feedback
- End of Course Evaluations are poor-quality
- Due to lack of thoughtful feedback, faculty don't value end of course evaluations

## Motivation:

- Preventing the communication gap between students and faculty
- Use technology to create interactive and engaging tools → students can fill course evaluations effectively



# Overview

- CPM 15 - exploratory reading groups on research topics
- CPM 15 not in session during summer
- discussion dashboard using CPM 15 student interviews to improve future SIP sessions
- Mitigate poor feedback



This project included  
**UI/UX** design, **survey**  
design, **qualitative**  
**analysis**, and  
**development** work



**Design**

# Design Process

1. Created Survey Questions
2. Used FigJam to create layout of discussion board
3. Went through multiple design layouts to create a unified one incorporating elements from each individual design



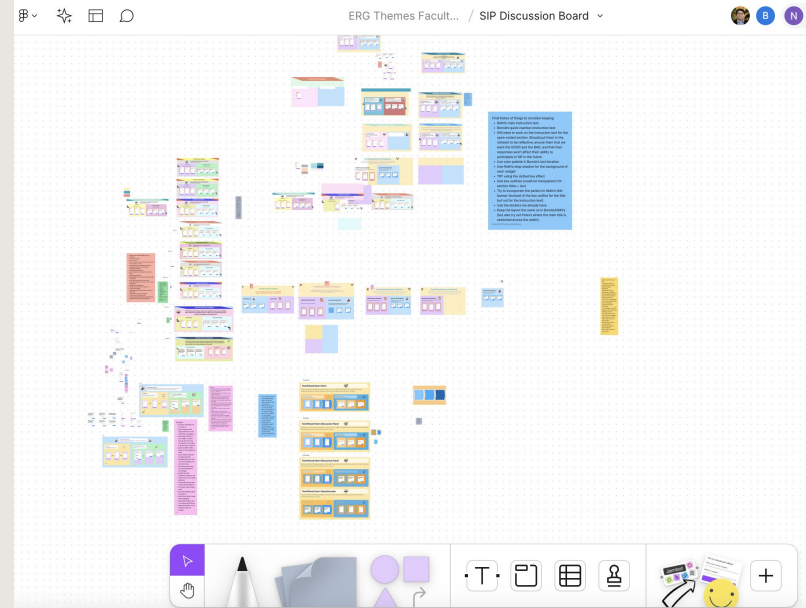
# FigJam

## Collaborative Online Whiteboard Tool

### Key Features:

- Sticky Notes
- Drawing Tools
- Ability to import/develop widgets

We used FigJam to create our discussion board consisting of different widgets



# Design Questions

- Aim: To receive feedback from Tech4Good Interns on their experience in the Tech4Good lab
- Conducted group brainstorming → narrowed down questions
- Divided questions into two categories:
  - quick reaction & open ended

**How did the size of the group you worked in affect your learning? Did you learn more in smaller groups of 2-3 people or in larger groups of 4 or more? Or did the size of the group not really matter? Why do you think that is?**

I felt prepared for my project by the end of the SIP preparation weeks

Strongly Agree 0

Agree 1

Disagree 8

Strongly Disagree 0

9 votes

Vote

# Initial Discussion Board Designs

Bonnie

## Tech4Good Interns Feedback

Hey Tech4Good interns. We've put together a quick reaction questions and open-ended questions. Answering all of the questions according to how you feel about whole process in the SIP tech4Good lab. We are looking forward to hear your thought!

### Quick Reaction Questions

Please indicate the extent of your agreement or disagreement by selecting the most appropriate option on the scale.

### Open-Ended Questions

We value your input! Please fill this questions by reflecting on your experiences at SIP.

Peter

## Tech4Good Intern Form

Please answer the following questions to the best of your ability. We hope that discussions from your responses will spark feedback that will contribute toward forthcoming SIP years. Thanks!

### Poll Questions

Choose the most fitting choice to the question.

### Open-Ended

Please answer honestly to the best of your ability.

Nidhi

## Tech4Good Intern Feedback

Hi Tech4Good Interns! Please answer these questions to the best of your ability. These questions are designed to help you reflect on your overall experience this summer. Your responses are valuable to us!

### Poll Questions

Please select the best option for you

### Open-Ended Questions

Please fill in your response

Zia

## Tech4Good Intern Form

Hello everyone! This is a dashboard which has been sent out to the Tech4Good lab in order to collect feedback on peoples personal Internship experience, as well as engaging discussion within the lab.

### Quick Polls

Please select an option from the following choices which best represents your experience in the lab!

### Free Response Questions

The following questions should be answered in complete sentences!

# Collaboratory Initial Designs

1st

## Tech4Good Intern Feedback



Hi Tech4Good Interns! Please answer these questions to the best of your ability. These questions are designed to help you reflect on your overall experience this summer. Your responses are valuable to us!

### Poll Questions

Please select the best option for you

<p>How did your project at SIP this summer go overall?</p> <p>Strongly Agree</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>	<p>Have you been able to get technical support from people in the Tech4Good org?</p> <p>Strongly Agree</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>	<p>What is your understanding of what you need to do to succeed in doing research like this for the rest of the preparation weeks?</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>
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### Open-Ended Questions

Please fill in your response

<p>Can you provide an explanation of what you understand about the goal of your research project?</p> <p>No message yet</p> <p>Submit</p>	<p>What is the biggest challenge you faced? What were the steps you took to solve the issue?</p> <p>No message yet</p> <p>Submit</p>	<p>How would you describe your experience/relationship with your professormentors?</p> <p>No message yet</p> <p>Submit</p>
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2nd

## Tech4Good Intern Feedback

Hi Tech4Good Interns! Please answer these questions to the best of your ability. These questions are designed to help you reflect on your overall experience this summer. Your responses are valuable to us!

**Quick Reaction Questions**  
Please indicate the extent of your agreement or disagreement by selecting the most appropriate option on the scale.



<p>How did your project at SIP this summer go overall?</p> <p>Strongly Agree</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>	<p>Have you been able to get technical support from people in the Tech4Good org?</p> <p>Strongly Agree</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>	<p>What is your understanding of what you need to do to succeed in doing research like this for the rest of the preparation weeks?</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>
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### Open-Ended Questions

Please answer the open-ended questions honestly and candidly, we want to hear both your positive and negative experiences. These answers will not affect your future participation in SIP programs.



<p>Can you provide an explanation of what you understand about the goal of your research project?</p> <p>No message yet</p> <p>Submit</p>	<p>What is the biggest challenge you faced? What were the steps you took to solve the issue?</p> <p>No message yet</p> <p>Submit</p>	<p>How would you describe your experience/relationship with your professormentors?</p> <p>No message yet</p> <p>Submit</p>
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3rd

## Tech4Good Intern Feedback

Hi Tech4Good Interns! Please answer these questions to the best of your ability. These questions are designed to help you reflect on your overall experience this summer. Your responses are valuable to us!

### Quick Reaction Questions

Please indicate the extent of your agreement or disagreement by selecting the most appropriate option on the scale.



<p>How did your project at SIP this summer go overall?</p> <p>Strongly Agree</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>	<p>Have you been able to get technical support from people in the Tech4Good org?</p> <p>Strongly Agree</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>	<p>What is your understanding of what you need to do to succeed in doing research like this for the rest of the preparation weeks?</p> <p>Agree</p> <p>Disagree</p> <p>Strongly Disagree</p> <p>Next</p> <p>Submit</p>
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### Open-Ended Questions

Please share your thoughts on the open-ended questions-both good and bad experiences are welcome. Don't worry, this answer will not affect your future participation in the SIP.



<p>Can you provide an explanation of what you understand about the goal of your research project?</p> <p>No message yet</p> <p>Submit</p>	<p>What is the biggest challenge you faced? What were the steps you took to solve the issue?</p> <p>No message yet</p> <p>Submit</p>	<p>How would you describe your experience/relationship with your professormentors?</p> <p>No message yet</p> <p>Submit</p>
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# Final Design

## Tech4Good SIP Intern Feedback

Hi Tech4Good Interns!

These questions are designed to help you reflect on your experience this summer and more importantly help the Tech4Good lab improve the program for future interns. Your responses are valuable to us!



### Quick Reactions

Please indicate the extent of your agreement or disagreement by selecting the most appropriate option on the scale.



I felt prepared for my project by the end of the SIP preparation weeks

Strongly Agree

Agree

Disagree

Strongly Disagree

[Vote](#)

I have a clear understanding of the purpose behind my project

Strongly Agree

Agree

Disagree

Strongly Disagree

[Vote](#)

I'm happy with how much I interacted with my mentor

Strongly Agree

Agree

Disagree

Strongly Disagree

[Vote](#)

### Open-Ended Questions

Please share your honest thoughts about your experience - both the good and bad. Don't worry, your feedback won't affect your future involvement in SIP.



How did the size of your group affect your learning? (did you learn more in small groups? larger groups? it didn't matter?)

No messages yet

[Add Message](#)

How often do you think meetings should be scheduled? What kinds of meetings (e.g. brainstorming sessions, progress check-ins, work sessions) were/would have been most beneficial for you?

No messages yet

[Add Message](#)

What things should we think about when giving out tasks to make sure everyone is working on something they can not only handle but also learn from?

No messages yet

[Add Message](#)

# Final Design Process

## Challenges:

- Tailoring the tone of the language for the particular audience (high school students)
- Hard to combine everyone's design of the dashboard
- Unchangeable font size in the poll widget

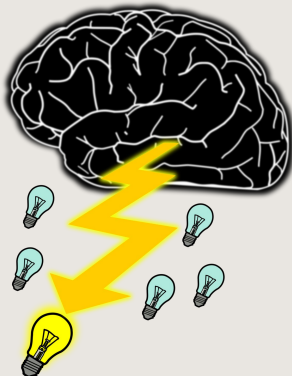




# Development

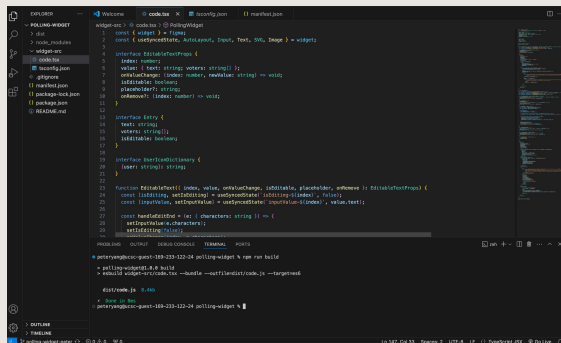


# The Process



## Brainstorming

- Draft ideas for widget functions
- Finalize ideas into list



## Coding

- Write code to implement proposals
- Test out in FigJam



## Revision

- Attend dev team meetings for feedback
- Repeat process



The image shows a poll widget interface. On the left is the form for creating a poll, and on the right is the results view.

**Form View (Left):**

- Input field: "Enter poll question here" with a pencil icon.
- Input field: "Enter option" with a pencil icon and an 'X' icon.
- A plus sign icon in a circle.
- A green "Submit" button.

**Results View (Right):**

- Sample Poll Question
- Answer 1 1
- Answer 2 0
- Answer 3 0
- Total votes: 1
- A circular icon with the letter 'P'.

## The Widget

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- Before and after form submission
- Change options and poll questions
- Votes are displayed below



# Widget Process

## Initial State

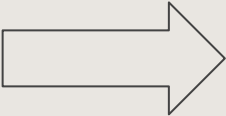
Enter poll question here ✎

Enter option ✎ ✕

+

Submit

Widget in basic form



## Submitted State

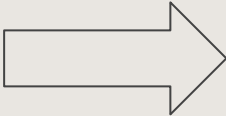
sample question

sample option 1 0

sample option 2 0

Total votes: 0

Form is submitted



## Voting State

sample question

sample option 1 1 P

sample option 2 0

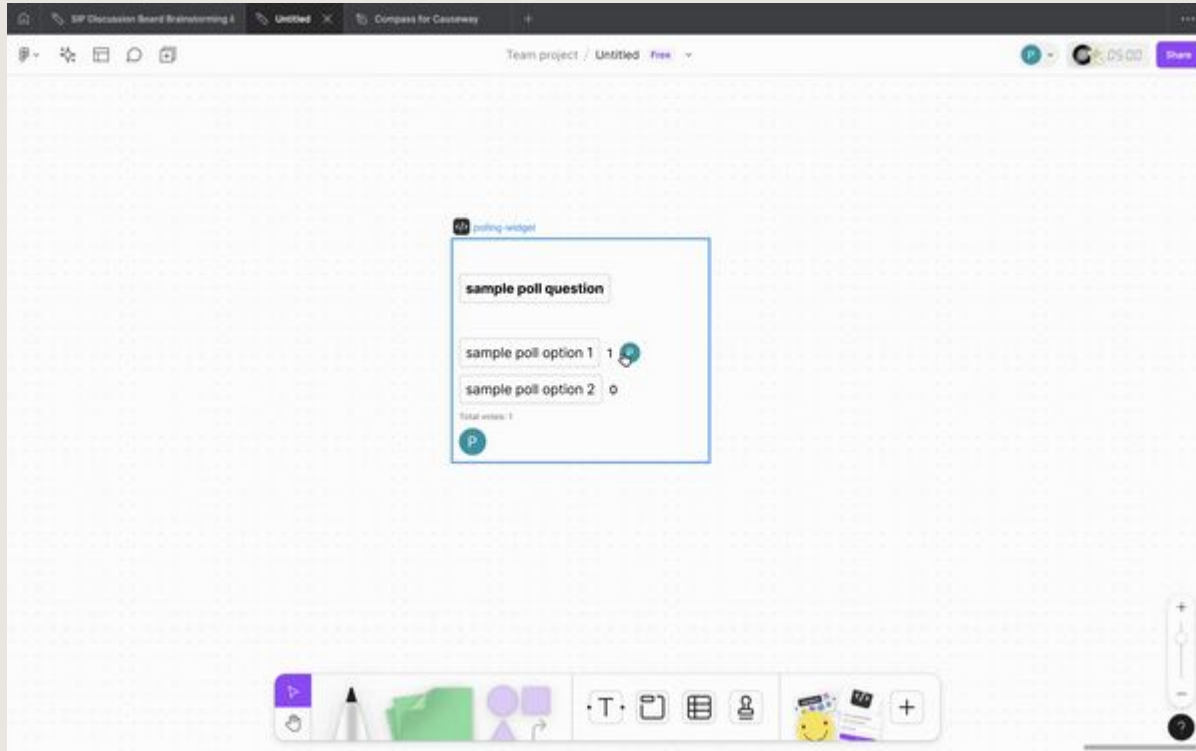
Total votes: 1

P

People vote for options



# Widget Voting



The screenshot shows a Miro workspace with a central poll widget. The browser tabs at the top include "Miro Discussion Board Brainstorming 1", "Untitled", and "Compass for Classroom". The workspace title is "Team project / Untitled Free". The poll widget, titled "polling-widget", contains the following text:

- sample poll question
- sample poll option 1 1
- sample poll option 2 0
- Total votes: 1

The widget is surrounded by a blue selection border. At the bottom of the workspace, there is a toolbar with various drawing and editing tools, including a hand, eraser, sticky notes, shapes, text, and a poll icon. A vertical zoom slider is visible on the right side of the workspace.



# Challenges

## Coding process

- troubleshooting errors and problem-solving
- Hard to simplify process when necessary

## Communication

- delays





# Analysis



# Qualitative Analysis

Annota - tool for conducting qualitative analysis (created by Tech4Good Lab)

- managing and organizing codes and memos
- Helps analyze live transcripts

Purpose: Give us practice to apply analysis to our own pilot

The screenshot displays the Annota interface. On the left, a list of annotations is shown under the heading 'Current Annotations'. The first annotation is 'RQ: Engagement & Feedback Quality', which has several sub-entries, each with a yellow folder icon. The right side of the interface shows a detailed view of a selected annotation. It includes a timestamp 'Student: [00:00:00]', a block of text from a transcript, and a code box containing the text 'Code Lacking Engagement because Uncomfortable'. Below the code box is a 'Memo' section with a paragraph of text. At the bottom of the code box, there are 'Delete' and 'Edit' buttons. Below the memo section, there is another code box labeled 'Others' codes x5' containing the text 'Group Discussion Barrier - Familiarity Students are more inclined to speak when...'. The background of the interface is light gray with a white sidebar on the left.



# Tech4Good Pilot

- Student led activity we conducted with the other SIP interns  
→ they filled out the discussion board
- Gave them guidance to answer the questions
- Spent some time filling out discussion board and more time discussing what people saw



# Tech4Good Pilot Results

## Observations:

- People liked overall aesthetic
  - cuteness/openness of prompts
- people stated responses similar to previous answers
  - people follow other responses
- lack of attention
  - No one wants to be the first to talk





# Lessons Learned



# Lessons Learned

## Lessons

### Design:

- Appealing formatting based on first impressions
- Acknowledgement to the flaws in certain color combinations
- The most effective phrasing of questions
- How to make the design most engaging

### Development:

- Components of TypeScript coding which is widely applicable
- Collaborating in Github
- Troubleshooting when there are flaws in the widget



# Future Implications

## **Future**

### Design:

- Awareness of audience perspectives
- Constructive feedback

### Development:

- Independent to collaborative workspaces
- Introduction to Typescript, Github, and Figma as a starting point



**Special thanks to our mentor  
David and Professor Lee for  
guidance and support at this  
program!**

